

CHAPTER 2.0 ALTERNATIVES CONSIDERED

This chapter presents a summary of the process that was used to formulate, evaluate, screen and refine the NEPA alternatives. It includes a general description of the eleven initial alternatives, the five alternatives selected for final screening, and a detailed description of the two alternatives advanced for detailed study in this EIS.

Selection of a Preferred Alternative

As a result of the screening process detailed below, the DEIS presented two alternatives for consideration. These were Alternative 1: No Build, and Alternative 4: I-15 Widening and Reconstruction. Alternative 4 included four options in the Provo/Orem area and three options for the American Fork Main Street Interchange reconstruction. Different combinations of these design options effectively provide a maximum of 12 alternatives for consideration.

After careful review of the alternatives, their impacts, and comments received during the public comment period, the Joint Lead Agencies have selected Alternative 4, with American Fork Option C and Provo/Orem Option D as their Preferred Alternative. The options selected for the Preferred Alternative have been refined slightly since the DEIS. These changes are described in section 2.2. Below, the two preferred options are highlighted for easy comparison with other alternatives. Section 2.6 provides a summary of the Preferred Alternative, and Chapter 3 discloses environmental impacts of all alternatives and options carried through the DEIS.

Commuter Rail Component of Alternative 4

As previously described in Section 1.1, it was initially contemplated that this EIS would serve as a decision document for both the transit component and the highway component of the solution to projected congestion on the I-15 corridor; therefore, the formulation and screening of alternatives included major transit and highway elements. Based on this approach, it was determined that two alternatives -- the No Build Alternative, and a build alternative which included commuter rail and I-15 reconstruction -- would be carried forward for detailed analysis. Shortly thereafter, Utah voters approved commuter rail as a locally funded UTA project and a decision was made by FHWA, UDOT and UTA that it was no longer necessary or appropriate for commuter rail to be considered as a proposed action or build alternative in the I-15 Corridor EIS. Instead, UTA studied commuter rail in an environmental disclosure document prepared pursuant to UTA policy, which was completed in October 2007. The Decision Document was signed in January of 2008. Construction of commuter rail in Utah and Salt Lake counties is scheduled to begin in 2008.

In light of these events, FHWA and UDOT reviewed the purpose and need and the assembly and screening of alternatives and determined that the screening process and resulting alternatives remained valid and appropriate. It was concluded that no different alternatives would have been assembled or carried forward had commuter rail been included in the No Build alternative from the inception of the study process. The only required change was to remove commuter rail as a component of the carried-forward build alternative, and incorporate it into the No Build Alternative, which includes all existing, approved and planned transportation improvement projects through 2030. This left I-15 widening and reconstruction, with potential alternative configurations at several points along the corridor, as the primary component of the build alternative (Alternative 4) that was carried forward for detailed study in this EIS.

Based on the above, it was concluded that this EIS should describe the alternatives evaluation and screening process as it was conducted, including the part of the process that preceded commuter rail's transition to a locally funded UTA project.

2.1 Alternatives Development and Screening

The alternatives development and screening process for this project was extensive and included numerous ideas from resource agencies and the public, as well as coordination with the MPOs, city staff, UDOT management, FHWA, and other stakeholders. Over a two-year period, the alternatives development and screening process evaluated a full range of alternatives and advanced two for detailed study. An Alternatives Screening Technical

Report¹ documents the screening process in detail and is available upon request. Figure 2-1 provides an overview of this process.

2.1.1 Evaluation Criteria and Definitions

The criteria that were used to assemble and evaluate alternatives were based on the primary purpose and need and on other secondary purposes and objectives as summarized in Chapter 1. If an alternative did not satisfy a primary purpose and need criterion, it was screened out. While alternatives were only screened out based on primary criteria, inconsistency with secondary criteria was also noted and considered as additional reasons in support of screening. Secondary screening criteria were not definitive in eliminating an alternative, but added to, or subtracted from, the merits of an alternative. The evaluation criteria are briefly described below.

2.1.1.1 Evaluation Criteria

Primary Criteria

- **Relieve I-15 Corridor Congestion:** For purposes of screening, two objective evaluation measures were adopted to assess an alternative's consistency with the primary purpose and need of relieving unacceptable 2030 congestion in the I-15 corridor. The first measure included the 2030 forecast peak hour volume-to-capacity ratio (V/C) at five east-west screenlines located along the study corridor (see Figure 2-2). At each of the screenline locations, the V/C was assessed for mainline I-15 and for major north-south arterials. A V/C above 1.0 was considered an indicator of excessive congestion. The second measure was the 2030 forecast peak-hour level-of-service (LOS) on mainline I-15, at the same screenline locations. An LOS of E or F along the screenline was considered an indicator of excess congestion. For purposes of comparing the alternatives and options that were carried forward for detailed evaluation, refined congestion evaluation criteria were applied. These criteria are the LOS on mainline I-15 and interchange components (including ramps, ramp termini intersections and intersections adjacent to ramp termini), and surface street delay in the Provo/Orem area.
- **Transit Improvements Cost Effectiveness:** For each major transit improvement scenario under consideration, an assessment of cost effectiveness was made, based on an estimate of the following factors: capital cost, operating cost, maintenance cost, and annual incremental cost per rider. This allowed a cost effectiveness comparison among the alternative transit scenarios. This criterion was only applied as a screening criterion after the initial screening.

Secondary Criteria

- **Improve Regional and Intra-County Movement of People and Goods:** To assess an alternative's consistency with the purpose of improving regional mobility, which for this EIS was defined as a transit-focused purpose, two objective measures were developed. The first was the 2030 forecast of daily transit trips between and within defined subareas within the study area. The second was the 2030 forecast of additional daily transit trips that would be taken within the study area utilizing a potential new transit facility. This allowed a comparison among the alternative transit scenarios.
- **Environmental Issues of Concern:** For purposes of screening, a general assessment of likely impact to major areas of environmental concern was considered for each alternative. This was subdivided into two evaluation sub-criteria: the built environment (likely impacts on existing homes, businesses, etc.) and the natural environment (likely impacts on significant wetland and wildlife resources, etc.). The appropriate

¹ A copy of the Alternatives Screening Technical Report may be viewed at the FHWA Utah Division office upon written request.

resource specialists assigned a level of “minor,” “minor to moderate,” “moderate,” “moderate to major,” or “major” to each alternative, allowing a general comparison. For purposes of comparing the alternatives and options that were carried forward for detailed evaluation, a more detailed assessment of impacts to environmental resources was performed, and is discussed in Chapter 3 of this EIS.

- **Compatibility with Local and Regional Plans:** Alternatives were assessed in terms of (1) whether the project or component under consideration is included in the applicable regional transportation plans (i.e., WFRC and MAG 2030 Regional Transportation Plans), and (2) whether the project or component was compatible with land use and transportation plans adopted by local governments (i.e., cities and counties along the study area corridor). With respect to the transportation plans, a characterization of “included,” “partially included” or “not included” was assigned to each alternative. For local plans, a characterization of “compatible,” “somewhat compatible” or “not compatible” was considered. Compliance with local and regional plans was not definitive in eliminating an alternative, but added to, or subtracted from, the merits of an alternative.
- **Safety and Design Improvements:** Alternatives were assessed for whether they would address the substandard roadway segments, ramps, and bridges that have been identified along the I-15 corridor in the study area. Alternatives were assigned either a “yes” or “no” for three different elements (improvements to bridge structures, traffic operation improvements, and safety improvements).

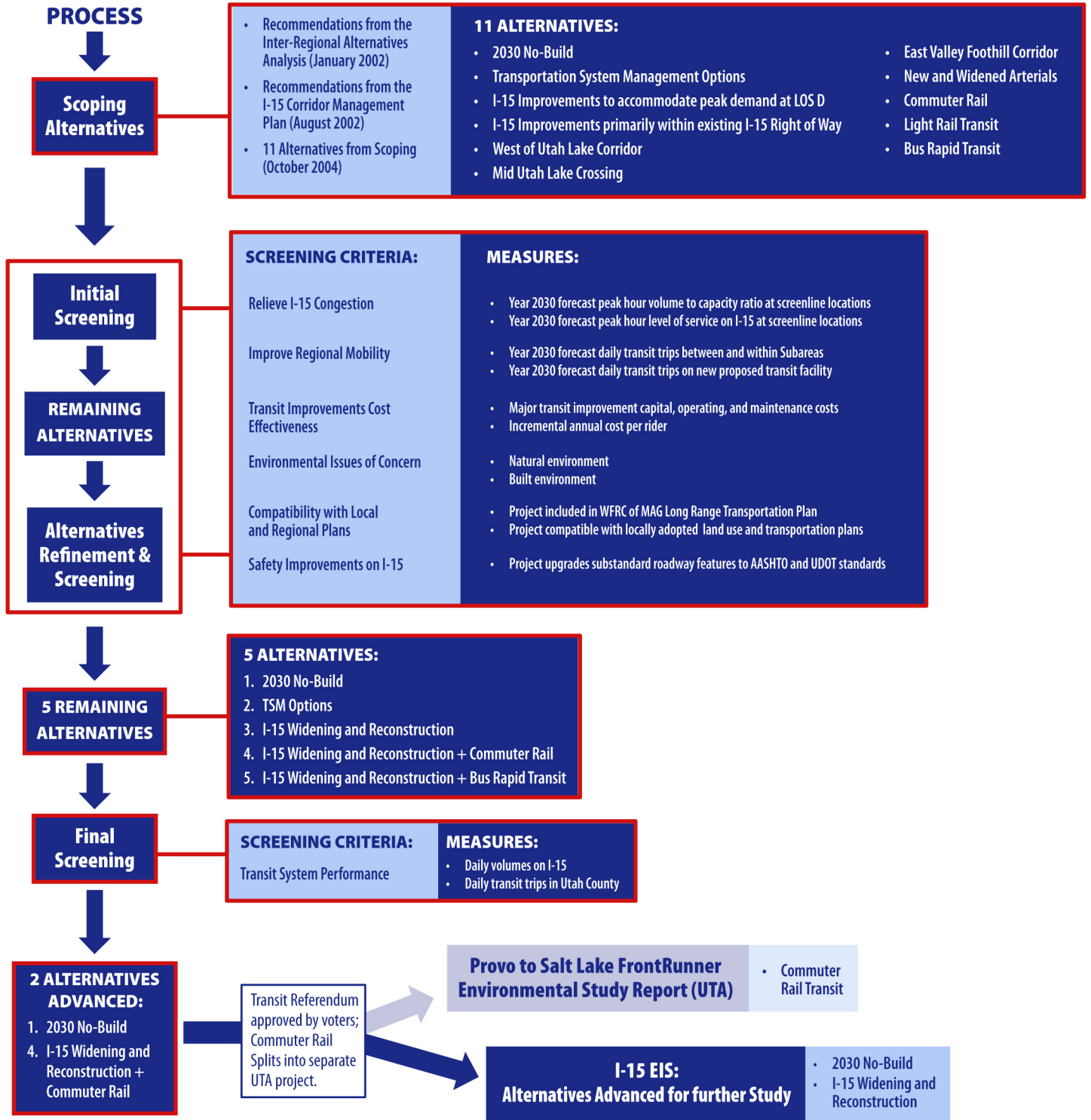


Figure 2-1
Schematic of Alternatives Development and Screening

I-15 CORRIDOR EIS | UTAH COUNTY - SALT LAKE COUNTY

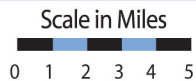
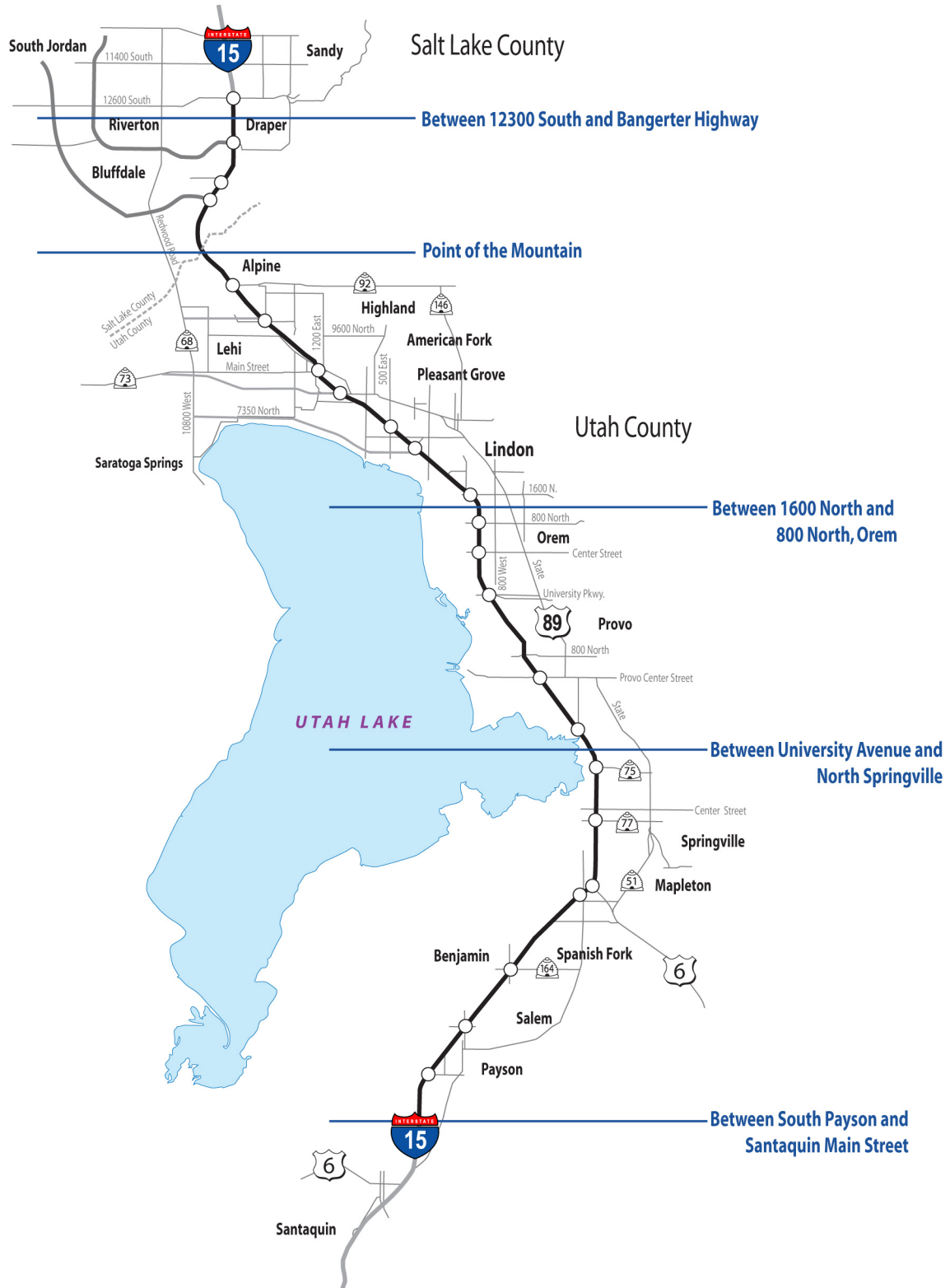


Figure 2-2
Screenline Locations

I-15 Interchanges
inside Study Corridor

I-15 Mainline inside
Study Corridor



2.1.1.2 Definitions

As a result of the ideas generated by the scoping process, several initial transit technologies and highway operations concepts were defined, as described below. These concepts were subsequently incorporated into the alternatives development process.

Transportation Systems Management (TSM)

TSM concepts consist of a variety of low-cost methods and technologies used to mitigate traffic congestion. TSM also includes Transportation Demand Management (TDM), and Intelligent Transportation Systems (ITS).

TSM measures include lower-cost strategies, such as intersection and roadway improvements, managed lanes, access management, ramp metering, auxiliary lanes, and incident management/transit service improvements. The components of TDM include ridesharing, staggered and flexible work hours, telecommuting, parking management, and trip reduction ordinances. ITS uses more technological approaches, including traffic operation centers, signal system improvements and coordination, transit signal priority, variable message displays, and vehicular and transit passenger information systems.

Express Lanes

Express lanes include both high occupancy vehicles (HOV) (2+ persons) and single occupant vehicles that are willing to pay a fee to use the excess capacity. I-15 currently has express lanes that extend from Orem University Parkway on the south to 400 North in Salt Lake City. The existing express lanes are separated from the general purpose travel lanes by pavement striping and are typically located in the far left lane of I-15. Early in the alternatives development phase of this process these were referred to as HOV lanes.

Light Rail Transit (LRT)

LRT is a system of electric-powered rail transit that uses light transit vehicles operating singly or in up to four-car trains on fixed rails. The right-of-way may or may not be separated from other traffic. LRT can reach top speeds of about 55 miles per hour. UTA has been operating LRT service, known as TRAX, in the Salt Lake City area since December 1999. Existing TRAX service is provided on two lines: the Sandy/Salt Lake Line from the Sandy Civic Center north to the Energy Solutions Arena, and the University Line from the Energy Solutions Arena east to the University of Utah Medical Center.

Bus Rapid Transit (BRT)

BRT is essentially "light rail transit on rubber tires." The type of vehicle anticipated for use would be express buses similar to what currently operates in the existing express lane. Initially, the following four types of BRT configurations were identified for consideration as part of the I-15 corridor alternatives:

- Additions to the Existing Bus Service
- Dedicated Lane for Buses
- Physically Separate Bus Lane on Arterial
- Grade-Separated/Non-General Purpose Lane for Buses

Commuter Rail Transit (CRT)

CRT technology would use diesel locomotives and two-level passenger coaches to carry passengers. CRT stations would be spaced farther apart than those serving LRT. The frequency of service for CRT would be less than that of an LRT service, with service concentrated during the morning and evening peak hours. CRT would be built to standards comparable to those of freight trains and operate on the same or adjacent right-of-way to that of freight and inter-city trains.

Diesel Multiple Unit (DMU)

DMU is a self-propelled commuter railcar that operates similarly to LRT. It is an alternative to locomotive-hauled passenger trains because railcars can be combined to form short trains. It can also start and stop in shorter distances and operate on sharper horizontal curves than CRT. DMUs are a fairly new transit technology and are not commonly used in the United States.

2.1.2 Initial Formulation and Screening of Alternatives

Based on public and agency input, eleven initial conceptual alternatives (10 build alternatives and the No Build) were assembled to provide and assess a range of approaches to potentially address the purpose and need. A brief description of each initial conceptual alternative, and its reason for being considered, is provided below.

M1: TSM Alternative

This alternative would include transportation systems management (TSM) strategies, transportation demand management (TDM) strategies, and intelligent transportation systems (ITS). A key component of this alternative would be that it would utilize the No Build lane configuration. Examples of the types of items included in this alternative include the following:

TSM Strategies:

- Low cost intersection/roadway improvements
- Reversible lanes
- Access management
- Incident management
- Transit service improvements

TDM Strategies:

- Rideshare promotion
- Staggered and flexible work hours
- Telecommuting
- Parking management
- Trip reduction ordinances

ITS Strategies:

- Traffic operation center
- Signal improvement/coordination
- Transit signal priority
- Variable message signs
- Transit passenger information

H1: I-15 Improvements, LOS D and Expanded ROW

This alternative would entail rebuilding of I-15 the entire length of the study area to the degree necessary to meet LOS D or better for purposes of the 2030 peak hour. The improvements necessary to achieve LOS D were initially assumed to require expansion of the existing ROW at numerous locations along the corridor; however, this assumption was later determined to be incorrect. Travel modeling indicated that to achieve LOS D throughout all or most of the study area, I-15 would need to be widened as follows (see Figures 2-3 and 2-4):

- From South Santaquin to North Payson, widened from 4 to 6 lanes
- From North Payson to US-6 interchange, widened from 4 to 8 lanes
- From US-6 interchange to University Avenue in Provo, widened from 6 to 10 lanes
- From University Avenue to Alpine, widened from 6-8 lanes to 12 lanes
- From Alpine to Proposed Porter Rockwell Interchange², widened from 8 to 14 lanes
- From Proposed Porter Rockwell Interchange to Bangerter Hwy, widened from 8-9 lanes to 12 lanes
- From Bangerter Hwy to 12300 South, widened from 10 to 12 lanes

² Addressed in the Mountain View Corridor EIS.

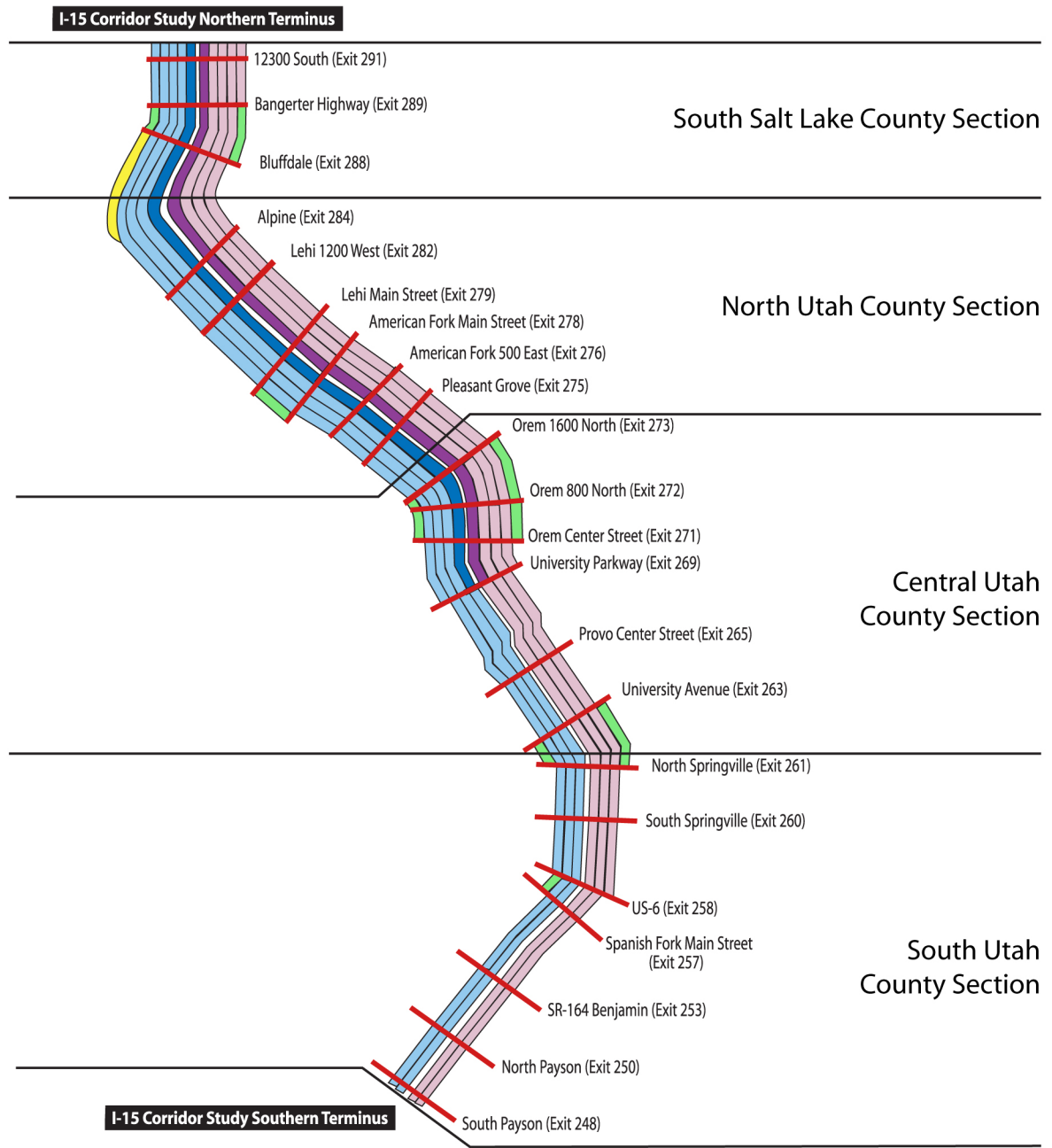


Figure 2-3
Existing I-15 Corridor Roadway Configuration/Number of Lanes

LEGEND

 Southbound General Purpose Lane	 Southbound Express Lane	 Climbing Lane
 Northbound General Purpose Lane	 Northbound Express Lane	 Auxilliary Lane



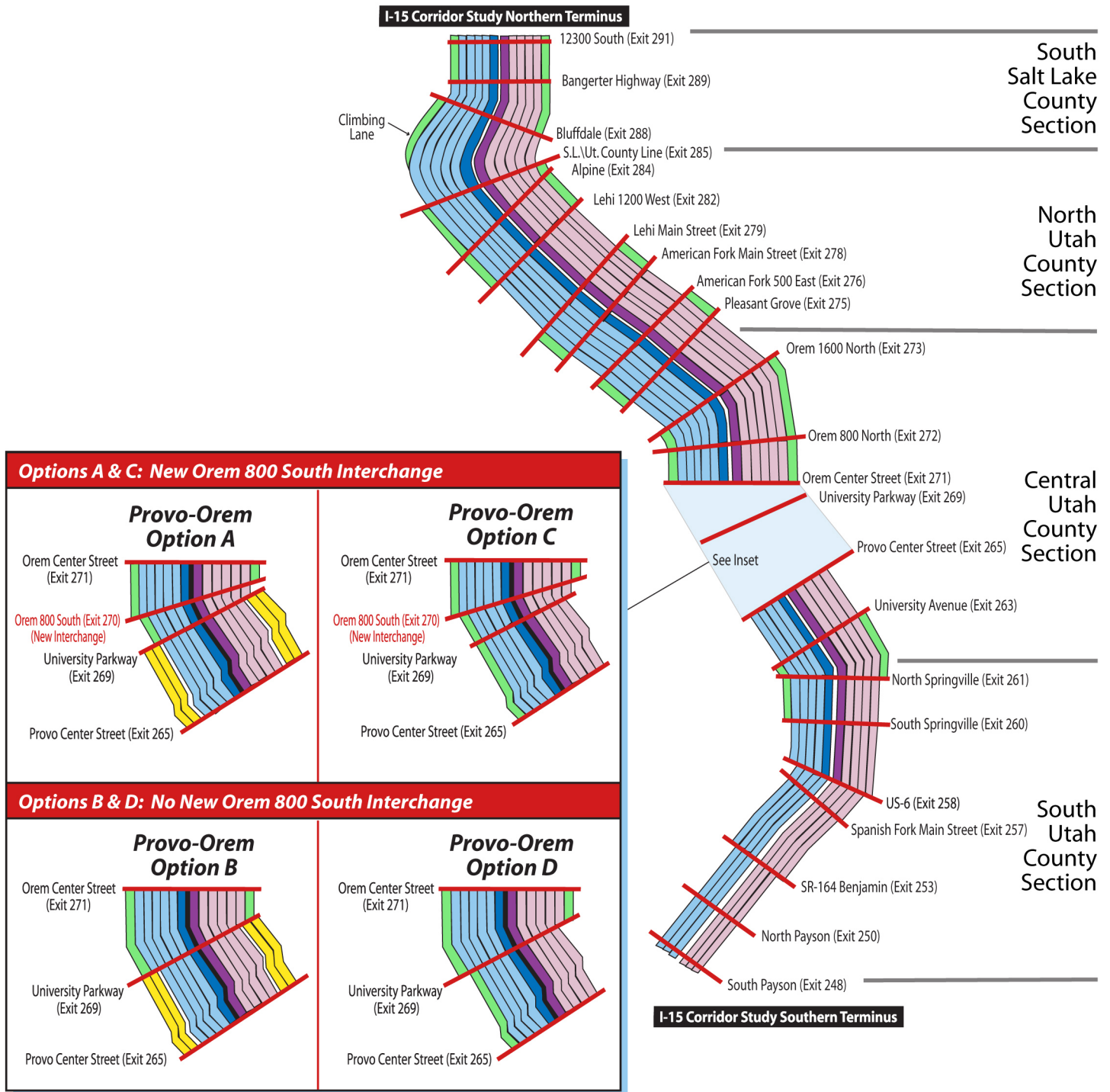


Figure 2-4
Proposed I-15 Lane Configuration

LEGEND

	Southbound General Purpose Lane		Southbound Express Lane		Frontage Road
	Northbound General Purpose Lane		Northbound Express Lane		Auxiliary Lane



H2: I-15 Improvements, Primarily Within Existing ROW

This alternative would entail rebuilding I-15 through most of the study area, but the improvements would be confined to within the existing ROW corridor in an effort to reduce cost and impact to the built and natural environment. Confinement to the existing ROW would limit the number of new lanes through much of the corridor. In general, the resulting lane configuration would be:

- From South Santaquin to North Payson, widened from 4 to 6 lanes
- From North Payson to US-6 interchange, widened from 4 to 8 lanes
- From US-6 interchange to 12300 South, widened from 6-8 lanes to 10 lanes

H3: New Highway West of Utah Lake

This alternative would entail building a new four-lane limited-access highway that would continue south from the southern end of the proposed Mountain View Corridor, on the west side of Utah Lake (see Figure 2-5). The new highway would generally follow Redwood Road (SR-68) south to where it meets US-6 southwest of the lake, and then follow US-6 east to its intersection with I-15. This alternative was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level by essentially developing a parallel new corridor to the west.

H4: New Mid-Utah Lake Crossing

This alternative would entail building a new four-lane limited-access highway that would continue south from the southern end of the proposed Mountain View Corridor, on the west side of Utah Lake, in the same manner as the West Utah Lake alternative, but would then turn east near Pelican Point on the west side of the lake (see Figure 2-5). From Pelican Point, the new highway would head east, across Utah Lake on a new causeway or bridge, and then overland to rejoin existing I-15 at approximately 800 South/University Parkway in Orem. Like the West Utah Lake alternative, this alternative was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level by essentially developing a parallel new corridor to the west, but shortening the new corridor to approximately coincide with what is projected to be the most congested stretch of the I-15 Corridor.

H5: East Valley Foothill Corridor

This alternative would entail building a new four-lane limited-access highway that would start at the southern terminus of Wasatch Boulevard in Draper (south Salt Lake County), and head south through the South Mountain area and the east bench in Utah County, and then turn west and connect with US-189 (University Avenue) in Provo (see Figure 2-5). This alternative was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level by essentially developing a parallel new corridor to the east.

H6: New and Widened Arterials

This alternative (see Figure 2-5) was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level through new and improved north-south arterials at locations already targeted for development by the MAG Regional Transportation Plan. Table 2-1 shows the elements of this alternative.

Table 2-1: New and Widened Arterials

Roadway	Existing Number of Lanes	Proposed MAG Regional Transportation Plan Number of Lanes*	Proposed Number of Lanes*
US-89 (State Street)	4-6 Lanes	6 lanes	8 lanes
SR-114 (Geneva Road)	2 lanes	4 lanes	6 lanes
SR-265 (University Parkway)	4-6 lanes	6 lanes	8 lanes
US-189 (University Avenue)	4 lanes	6 lanes	8 lanes
SR-68 (Redwood Road)	2 lanes	4 lanes	6 lanes
East Lake Corridor	N/A	N/A	4 lanes
South County Belt Route	N/A	N/A	4 lanes

* Both directions. Does not include turn lanes.

T1: Commuter Rail Transit (CRT) on UTA ROW

This alternative would entail construction of a heavy rail, diesel engine commuter rail system from Salt Lake County to Springville (a subset of the overall Ogden to Springville commuter rail system), located within UTA's existing ROW generally located west of I-15, through the study area (see Figure 2-5). This alternative was designed to assess the effectiveness of relieving I-15 congestion through the addition of a significant new mass transit project, and to allow a comparison among other potential mass transit modes.

T2: Light Rail Transit (LRT) as Extension of Trax System

This alternative would consist of extending the existing UTA light rail TRAX system (see Figure 2-5). The TRAX extension would begin at the existing Sandy Station at 10000 South in Salt Lake County, and extend south to a new Orem Intermodal Center located near the University Parkway Interchange. The TRAX extension would utilize UTA's existing ROW from Sandy south to Lindon, and then would require a new ROW obtained from the Union Pacific Railroad from Lindon south, through Vineyard and then to the new Intermodal Center. This alternative allows a comparison of LRT to CRT as the primary mass transit component in the I-15 Corridor.

T3: Bus Rapid Transit (BRT)

This alternative would consist of a new bus rapid transit service running between Salt Lake City and Sandy on the north, to Provo on the south (see Figure 2-5). This system would utilize I-15 express lanes from Salt Lake City and Sandy south to Alpine (intersection with SR-92), where it would transition to a new dedicated road using UTA's existing ROW on the east side of I-15, and then follow State Street to the intersection with University Parkway. This alternative allows a comparison of BRT with CRT and LRT as the primary mass transit component in the I-15 corridor.

NB: No Build

The No Build Alternative consisted of the following elements: all highway and transit projects identified in the MAG Utah Valley 2030 Regional Transportation Plan without I-15 widening and reconstruction; all highway and transit projects identified in the 2030 Wasatch Front Regional Transportation Plan without I-15 widening and reconstruction; Mountain View Corridor; and on-going routine I-15 pavement and bridge preservation projects.

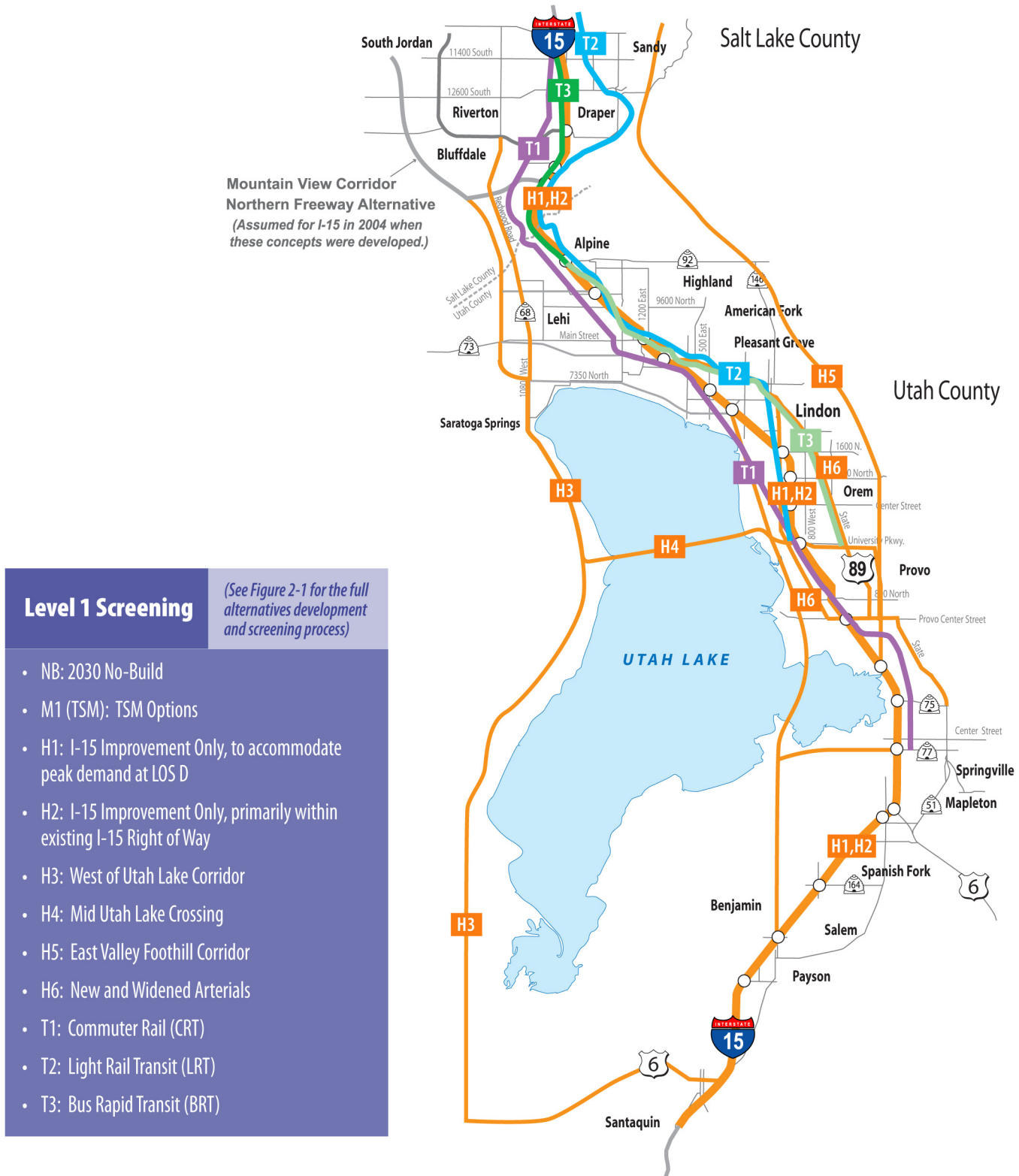


Figure 2-5
Initial Alternatives

2.1.2.1 Alternatives Eliminated from Further Consideration

A screening workshop to consider the initial alternatives was held on February 10, 2005. Representatives from the following agencies were invited to participate: Federal Highway Administration, Utah Department of Transportation, Federal Transit Administration, Utah Transit Authority, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of Interior, Utah Department of Natural Resources, Utah Department of Water Quality, Utah Division of Forestry, Fire and State Lands, Utah Division of Parks and Recreation, Utah Division of Wildlife Resources, Utah State Historic Preservation Office, Governor's Office of Resource Development, and the Department of Natural Resources. Environmental issues of concern were considered at a corridor level based on professional judgment and input from resource agencies.

As a result of the initial screening, several alternatives were eliminated from further consideration for the following reasons:

- I-15 Improvements within Existing I-15 Right-of-Way
 - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
- New and Widened Arterials from the MAG Regional Transportation Plan
 - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F. This alternative was not advanced as a stand-alone option.
- New Highway West of Utah Lake
 - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
 - Resource agencies expressed concerns with impacts to wetlands, wildlife, and induced growth.
- Mid-Utah Lake Crossing
 - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
 - Resource agencies expressed concerns with impacts to wetlands, wildlife, and induced growth.
- East Valley Foothill Corridor
 - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
 - Disruption to the built environment
- All Stand-Alone Transit (BRT, CRT, LRT)
 - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F. These alternatives were not advanced as stand-alone options but were incorporated into other alternatives.

2.1.3 Alternatives Refinement and Screening (April 2005 – July 2005)

From the results of the initial screening, packages of multi-modal alternatives were defined that provided the highest likelihood of meeting the project purpose and need. The packaged alternatives are combinations of I-15 improvements, transportation management options, CRT, LRT, and BRT. During this screening and evaluation process, combinations including DMU were also evaluated and compared to LRT. Additional technical analyses and travel demand forecasting were conducted to provide a basis to evaluate these alternatives. Highway and transit combinations were modeled using the current WFRC/MAG regional model. The models evaluated both the function of the I-15 mainline and transit ridership.

Three screening workshops were held between April and July 2005. The same agencies invited to the initial screening were also invited to participate in these screenings. Environmental issues were considered at the corridor level based on professional judgment and input from resource agencies. An *Alternatives Development and Screening Technical Data* report was produced (FHWA 2007), and is available at the FHWA division office.

2.1.3.1 Alternatives Eliminated from Further Consideration

As a result of the alternatives refinement and screening, the following alternatives were eliminated from further consideration for the reasons provided:

- All Packaged Alternatives that included LRT
 - High capital cost, transit operating cost, and incremental cost per new rider
- All Packaged Alternatives that included DMU
 - High capital cost, transit operating cost, and incremental cost per new rider

2.1.3.2 Alternatives Carried Forward

Based on the results of the alternatives refinement and screening, five alternatives were selected for further evaluation. These alternatives were renamed for the final screening and are as follows:

- Alternative 1: No Build
- Alternative 2: Transportation Systems Management (TSM)
- Alternative 3: I-15 Widening and Reconstruction
- Alternative 4: I-15 Widening and Reconstruction, plus CRT
- Alternative 5: I-15 Widening and Reconstruction, plus BRT

Alternative 1: No Build

The No Build Alternative consisted of the following elements:

- All highway and transit projects identified in the MAG Utah Valley 2030 Regional Transportation Plan (2005 adopted version) without I-15 widening and reconstruction
- All highway and transit projects identified in the Wasatch Front Urban Area Regional Transportation Plan Update: 2004-2030 without I-15 widening and reconstruction
- Mountain View Corridor
- Ongoing routine I-15 pavement and bridge preservation projects

Alternative 2: Transportation System Management (TSM)

In addition to the No Build improvements to the transportation system, this alternative includes the TSM, TDM, and ITS components listed below.

TSM includes strategies to improve the operating efficiency of the highway and transit systems, such as “low cost” intersection/roadway improvements; managed lanes; access management; incident management; and transit service improvements. The following elements are included in the TSM Alternative:

- Increase Express Bus in Express Lanes (Double by 2030)
- Additional Park-and-Ride Lots
- Bus Prioritization (Ramp Queue Jumping)
- Improved Feeder Service
- Higher Capacity Bus
- 3+ Persons in Express Lane
- Low Cost Roadway Improvements/Intersections
- Reversible Lanes
- Access Management
- Incident Management
- Add Northbound Climbing Lane at Point of the Mountain
- Ramp Metering
- Minor Interchange Improvements
- Auxiliary Lanes
 - SR-75 / SR-77 Both Directions

- University Avenue / SR-75 (Existing)
- Provo Center/University Avenue Both Directions
- American Fork 500 East / Pleasant Grove Both Directions
- Lehi Main / American Fork Main Both Directions
- Lehi 1200 West / SR-92
- Possible Lower Bus Fares
- Express Lane to Payson

TDM includes strategies to reduce vehicular demand during peak travel times, including rideshare promotion; staggered and flexible work hours; telecommuting; parking management; trip reduction ordinances; and media campaigns.

ITS is the application of advance technologies to improve the efficiency and safety of transportation systems. Specific elements include a traffic operation center; signal system improvement/coordination; transit signal priority; variable message signs; and transit passenger information systems.

Travel demand modeling was performed to assess the performance of this alternative. To evaluate the effectiveness of this alternative, modeling assumed transit and freeway auxiliary lane improvements and a 5% increase in capacity and free flow speed on key corridors, which would be achieved by using a combination of the above strategies. The corridors and limits for which the capacity and free-flow speed were increased are as follows:

- Redwood Road (SR-68) – SR-73 to Bangerter Highway
- State Street (US-89) – US-6 to American Fork 100 East (SR-74)
- University Avenue (US-189) – I-15 to Orem 800 North (SR-52)
- Orem 800 North (SR-52) – State Street (US-89) to University Avenue (US-189)
- Geneva Road (SR-114) – University Parkway (SR-265) to State Street (US-89)
- University Parkway (SR-265) – State Street (US-89) to University Avenue (US-189)

Alternative 3: I-15 Widening and Reconstruction

Alternative 3 would include widening and reconstruction of the existing I-15 facility. The improvements would involve the following:

- Addition of general purpose lanes
- Extension of express lanes to US-6 in Spanish Fork
- Construction of two new interchanges (Orem 800 South and North Lehi). Three interchange options are being considered at American Fork Main Street
- Addition of a frontage road system in the Provo/Orem area. Four options were considered, two with frontage roads (Options A and B).
- Reconstruction of interchanges
- Improvements to bridges that cross the roadway
- Improvements to connecting arterial streets

Alternative 4: I-15 Widening and Reconstruction, plus CRT

Alternative 4 would include I-15 improvements included as part of Alternative 3 plus CRT from the Salt Lake City Intermodal Center to South Provo.

Proposed CRT station locations are as follows:

- Provo Intermodal Center (near University Avenue in East Bay)
- Orem Intermodal Center (University Parkway)

- Vineyard (at the old Geneva Steel site)
- American Fork Main Street
- Thanksgiving Point in Lehi
- Bangerter Highway in Bluffdale
- 10200 South in Sandy
- 5300 South in Murray
- Salt Lake City Intermodal Center (200 South 600 West)

CRT was modeled using 20-minute headways (timeframe between buses or trains) during peak periods and 40-minute headways during off-peak periods.

UTA's current plan for an operating schedule has trains running every 15 minutes during the AM and PM peak hours (in peak direction), every 30 minutes during off-peak hours during the day, and every 60 minutes during the evening hours between 7 PM and 11 PM, with hourly Saturday service.

Alternative 5: I-15 Widening and Reconstruction, plus BRT

Alternative 5 would include I-15 improvements included as part of Alternative 3 plus BRT from the Salt Lake Intermodal Center to South Provo. The BRT system would not be separated from I-15 but would operate in the Express Lane.

BRT was modeled using 20-minute headways during peak periods and 40-minute headways during off-peak periods. Three separate routes were modeled: one each for south, central, and north Utah County. Each route was modeled to serve three or four stations and then travel directly to downtown Salt Lake City.

2.1.4 Final Alternatives Screening

Following the identification of these five alternatives, the referendum described in Chapter 1 passed, effectively advancing commuter rail as a locally approved and funded transit component. Based on this referendum UTA, FHWA and UDOT agreed to separate commuter rail from the I-15 EIS (see Appendix A). Subsequently, these agencies held a series of meetings to consider the final screening of alternatives, and the effect of the commuter rail referendum on alternatives advancement. The results of the screening are described below.

2.1.4.1 Alternatives Eliminated from Further Consideration

As a result of the alternatives refinement and screening, including the above referenced meetings, the following alternatives were eliminated from further consideration:

- **Alternative 2 – TSM**
This alternative had V/C ratios in excess of 1.0 and an LOS worse than D through a majority of the study area. Therefore this alternative did not meet the primary purpose of relieving congestion within the I-15 corridor. Individual TSM elements were included as part of the remaining alternatives.
- **Alternative 3 – I-15 Widening and Reconstruction**
This alternative was dropped because it did not include a transit component, and is therefore inconsistent with results of the referendum, which approved and funded commuter rail.
- **Alternative 5 – I-15 Widening and Reconstruction plus BRT**
Alternative 5 was eliminated because its transit component (BRT) did not perform as well as Alternative 4's transit component (CRT). Alternative 5 would carry 2,275 fewer total transit riders and 4,652 fewer express transit riders than Alternative 4. Transit travel time for BRT riders would be 30-50% longer than CRT riders. In addition, Salt Lake County and Utah County voters demonstrated their desire for CRT by vote in November 2006, and CRT is proceeding.

2.1.4.2 Alternatives Carried Forward

This section describes the two alternatives that were advanced from the multi-level screening analysis.

Alternative 1: No Build

- The definition of Alternative 1: No Build was revised to take into account both the advancement of CRT into UTA's local project development process and decisions made in the Mountain View Corridor EIS planning project regarding the location of the southern connection of the proposed Mountain View Corridor to I-15 in Utah County. As a result, Alternative 1 consists of the following elements:
- All highway and transit projects identified in the MAG Utah Valley 2030 Regional Transportation Plan (2005 adopted version);
- All highway and transit projects identified in the WFRC 2007-2030 Regional Transportation Plan;
- Proposed Mountain View Corridor as a freeway connecting to I-15 at Lehi 2100 North;
- Ongoing routine I-15 bridge and pavement preservation projects

Alternative 4: I-15 Widening and Reconstruction, plus CRT

Alternative 4 would provide for major widening and total reconstruction of the existing I-15 facility, including the following:

- Addition of general purpose lanes;
- Extension of express lanes to US-6 in Spanish Fork;
- Reconstruction of existing interchanges. Three options are being considered at American Fork Main Street.
- Construction of a new interchange (North Lehi).
- Four interchange and frontage road options in the Provo/Orem area.
- Reconstruction of bridges that cross over or under I-15
- Improvement to cross streets as needed to tie into the existing roadway. Cross street widths are in accordance with the current LRP
- Commuter rail from Provo to Salt Lake (FrontRunner)

2.1.5 *Advancement of Commuter Rail*

The screening process advanced Alternative 4: I-15 Widening and Reconstruction, plus CRT for further study. In November 2006, voters approved funding for Commuter Rail in Utah and Salt Lake counties, and construction is anticipated to begin in spring 2008. Therefore, the commuter rail component of Alternative 4, now known as Provo to Salt Lake FrontRunner, has been studied by the Utah Transit Authority in October 2007. The Decision Document was signed in January 2008. In the remainder of this document, Alternative 4 only includes the highway components.

2.2 Detailed Description of Alternative 4

An overview of the existing I-15 lane configuration is illustrated on Figure 2-3, and an overview of the proposed lane configuration is illustrated on Figure 2-4. Typical section illustrations for the various lane configurations are provided on Figures 2-6, 2-7, and 2-8. Volume II of this EIS contains the conceptual engineering drawings of Alternative 4, shown on 11x17 aerial photography base maps. Cross-references to this volume are included in the following discussion where appropriate.

The I-15 Corridor was divided into four geographic sections to facilitate evaluation and presentation in this EIS. These sections are listed below and illustrated on Figures 2-3 and 2-4:

- South Utah County Section (South Payson Interchange to University Avenue Interchange)
- Central Utah County Section (University Avenue Interchange to Pleasant Grove Interchange)
- North Utah County Section (Pleasant Grove Interchange to County Line)
- South Salt Lake County Section (County Line to 12300 South Interchange)

Table 2-2 cross-references these sections to the relevant conceptual design sheets in Volume II of this EIS.

Table 2-2: Volume II Cross-References

Geographic Section	Volume II Sheet Numbers
South Utah County Section	Sheets 12 to 39
Central Utah County Section	Sheets 39 to 61
North Utah County Section	Sheets 61 to 86
South Salt Lake County Section	Sheets 86 to 96

I-15 improvements include additions or changes to the I-15 mainline, auxiliary lanes, interchanges, bridges, and other design features, including drainage elements and pedestrian and bicycle facilities. A summary description and an illustration of the proposed improvements in each section of the project are provided below.

2.2.1 *South Utah County Section (South Payson Interchange to University Avenue Interchange)*

A summary of the proposed improvements to this section is shown in Figure 2-9.

2.2.1.1 Mainline Improvements

The existing lane configuration in this section is as follows:

- Two general purpose lanes in each direction between the South Payson Interchange and the US-6 Interchange
- Three general purpose lanes in each direction between the US-6 Interchange and the University Avenue Interchange
- One auxiliary lane southbound between the US-6 Interchange and the Spanish Fork Main Street Interchange
- One auxiliary lane in each direction between the North Springville Interchange and the University Avenue Interchange

Proposed mainline improvements in the South Utah County section are as follows:

- One general purpose lane in each direction would be added between the South Payson Interchange (Payson 800 South) and the Benjamin Interchange (SR-164), resulting in three general purpose lanes in each direction.
- Two general purpose lanes in each direction would be added between the Benjamin Interchange (SR-164) and the US-6 Interchange, resulting in four general purpose lanes in each direction between these two points.
- One general purpose lane and one express lane in each direction would be added between the US-6 Interchange and the University Avenue Interchange, resulting in four general purpose lanes and one express lane in each direction.